

REMARKS

Status of claims:

Claims 3, 26-27, and 29-32 remain for reconsideration. Claims 1-2, 4-25, and 28 have been cancelled without prejudice or disclaimer in order to reduce the issues on reconsideration.

Claim 3 is now independent and contains the limitations of its now cancelled parent claim. Claim 31 has also been rewritten into independent form, further addressing the 35 U.S.C. § 112 issues as discussed below.

The amendments introduced herein are believed proper under 37 C.F.R. § 1.116 as they do not introduce any new features which would require a further search and are believed to put the claims in condition for allowance or in better form for appeal. As such, entry of the amendment is respectfully solicited.

Rejections under 35 U.S.C. § 112, first paragraph:

Claims 2-3 and 28-32 stand rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. In particular, the Examiner has found that the specification does not disclose

“forming a lens **on top of the fiber optic** and depositing a **polymer on top of the fiber optic**” (emphasis Examiner’s). This rejection is respectfully traversed.

With regard to the lens on top of the fiber optic, referring the Examiner to Page 6, lines 10-14 of the original specification it clearly states:

“Figure 5 shows a cross section of a fiber optic 220 as described with respect to Figure 4. After the fiber optic 220 is inserted into the substrate, the end of the fiber optic 220 may be polished to provide a better coupling. A lens 250 can be added as described later” (emphasis added).

With regard to depositing a polymer on top of the fiber optic, one of ordinary skill would readily appreciate that the lens material comprises the recited polymer. Indeed page 7, lines 6-9 of the original specification states:

“A further enhancement of the fiber optic photonic via... is to form a lens to better direct light...One method of forming a lens is to apply polymer to the end of the photonic via” (emphasis added).

It is respectfully submitted that one of ordinary skill in the art would find Applicant’s original description fully enabling under 35 U.S.C. § 112, first paragraph. In addition to the clear description discussed above, Figure 5 clearly shows a substrate 222 having a hole through which a fiber optic 220 is

inserted with a lens 250 formed on top of the fiber optic 220. Further as pointed out above, the specification undeniable states that the lens may comprise a cured polymer.

It is respectfully submitted that the Examiner's finding that one skilled in the art would be confused by Figure 5 and the accompanying discussion to the point of non-enablement is unreasonable. Withdrawal of this rejection is respectfully solicited.

Rejections under 35 U.S.C. § 112, second paragraph:

Claims 31 and 32 have been rejected under 35 U.S.C. 112, second paragraph as being indefinite. In particular, in claim 31, the Examiner has taken issue with the phrase "the hole extends" in line 2 finding that there is insufficient bases for this limitation because there is no processing step for forming a hole in the cladding layer. This objected to language has been deleted from claim 31 without prejudice. As amended, this rejection should be withdrawn.

Allowable Subject Matter:

Claims 31 and 32 have no grounds of rejection outstanding. Claim 31 has been rewritten into independent form. It is respectfully submitted that

claims 31 and 32 stand in condition for allowance and such is respectfully solicited.

Prior Art Rejections:

Applicants note with appreciation the apparent withdrawal of the numerous previous grounds of prior art rejection. In the final Office Action, the Examiner has presented only one prior art rejection involving a newly cited patent to Kupperman. Specifically, in the final Office Action, claims 1-3, 16, and 26-28 stand rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,169,188 to Kupperman in view of U.S. Patent 6,311,004 to Kenney.

This rejection are respectfully traversed based on the following discussion.

Briefly, the present invention is directed to a method of making a photonic via in a substrate. As amended claim 3 is directed to embodiments of the invention shown in Figures 4 and 5 and described on page 6 of the specification. Claims 27-30 are further directed embodiments of the invention shown in Figures 7 and 8 and described on pages 7-9 of the specification.

In particular, the photonic via is formed by creating a hole in a substrate, heating the substrate to expand the hole, inserting a fiber optic in the

hole and allowing the substrate to cool, thus contracting the hole and holding the fiber optic in place. As recited in later claims, various methods are claimed for forming the angled waveguides to redirect light from the fiber optic in a direction substantially parallel to the substrate.

Kupperman:

Before discussing the merits of the newly cited reference to Kupperman, Applicant submits that the Examiner has not met his initial burden of showing a *prima facie* case of obviousness because Kupperman involves non-analogous art when compared with Applicant's invention and the remaining reference to Kenney. Kupperman appears to teach shrink fit metal or ceramic straps for a container or vessel as a means for detecting tampering. That is, Kupperman appears to be directed to tamper-revealing seals. Conversely, Applicant's invention is generally directed to optical circuits including photonic vias, waveguides, and lenses. Optical circuits and tamper resistant seals are unrelated. Therefore, one skilled in the art of optical circuits would not have been motivated to refer to Kupperman's teaching regarding tamper revealing seals.

Analogous art is all art that is either in the field of technology of the claimed invention or deals with the same problem solved by the claimed invention. There is no common environment between the references cited by

the Examiner. The Examiner has focused too heavily upon one aspect of the invention (i.e. shrink fitting), rather than on the subject matter as a whole. For the teachings of a reference to be prior art under §103, there must be some basis for concluding that the reference would have been considered by one skilled in the particular art working on the pertinent problem to which the invention pertains. Here, there is none.

That being said, Kupperman appears to be directed to a flexible U-shaped metal strap or ceramic cable, used as a seal, that may be shrink fit at both ends into a binding element such as an alumina or zirconium plate. The seal has microscopic imperfections therein that may be used as a “fingerprint” to detect if the seal has been broken or replaced. This is unrelated to “methods of making photonic vias” as claimed.

The Examiner has noted that Kupperman does not teach “polishing the substrate” and therefore has further relied on Kenney. U.S. Patent 6,311,004 to Kenney appears to be directed to a therm-optic polymer photonic device. Again, Kenney does not teach a hole through the substrate, nor does it teach or suggest heating the substrate or placing a fiber optic in the heat expanded hole. To the extent that Kenney teaches “polishing” as it is relied upon by the Examiner, this combined with Kupperman does not amount to a showing of prima facie obviousness.

For each and every claim at issue, the Examiner must make out a case

of prima facie obviousness with regard to the multi-part test set forth by the Supreme Court in Graham. Referring the Examiner now to MPEP § 2143, titled "Basic Requirements for a Prima Facie case of Obviousness", the MPEP mandates that:

"To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine the reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all of the claimed limitations.

The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not applicant's disclosure." (emphasis added).

Indeed, the combination of Kupperman and Kenney do not meet any of these three criteria. First, there is certainly no motivation to combine found in either reference to combine tamper resistant seal of Kupperman with a polished device of Kenney. Indeed, there would be no reason to "polish" a tamper resistant seal. It would serve no purpose. Second, there can be no meaningful expectation of success since there would be nothing by which to measure success. If one were to polish the tamper resistant seal nothing would be gained. Finally, all of the limitations are not present in the references even

when combined.

Independent claim 3 recites “A method of making a photonic via comprising: making a hole in a substrate, wherein the hole extends from one side of the substrate through the substrate to an opposite side of the substrate; heating the substrate to expand the hole; inserting a fiber optic into the hole; cooling the substrate to contract the hole to hold the fiber optic in place; polishing the substrate; applying a polymer on top of the fiber optic; and curing the polymer to form a lens” (emphasis added).

These limitations are not shown in either Kupperman or Kenney, alone or in combination. In fact, neither reference teaches making the claimed method of making a photonic via.

Since the features recited in the claims are not taught or suggested by the prior art of record, taken alone or in combination, it is respectfully requested that the outstanding grounds of rejection be withdrawn.

In view of the foregoing, it requested that the application be reconsidered, that claims 3, 26-27, and 29-32 be allowed and that the application be passed to issue. Please charge any shortages and credit any overcharges to our Deposit Account number 02-2666.

Respectfully submitted,

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Date: 7/13/04 

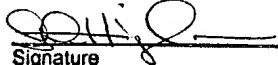
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